What is claimed is:

1. A position sensor for locating multiple radiating sources, comprising:

first, second and third linear sensors, each linear sensor comprising:

an optical device that focuses a source of radiation to form a line image parallel to a longitudinal optical axis of said optical device; and

an elongated light sensitive area positioned in a focal plane of said optical device for developing signals responsive to said radiation, said area comprising at least one linear array of photosensitive elements parallel to an axis that is aligned substantially orthogonal to said longitudinal optical axis of said optical device,

said first, second and third linear sensors each having said light sensitive area arranged in a plane, the axes of the light sensitive areas of said first and second sensors being aligned in a first direction and the axis of the light sensitive area of said third sensor being oriented in a second direction orthogonal to the first direction and disposed between said first and second linear sensors;

a computational device coupled to the linear sensors and adapted to

(a) turn radiation sources on and off;

(b) determine an image peak position of a radiation source in a video frame for each of a plurality of radiation sources and linear sensors;

(c) store image peak positions in a storage device;

(d) generate an association table for relating each of the plurality of radiation sources with their respective image peak positions;

(e) set a gate width for searching for a radiation source-associated-peak in a subsequent video frame, predicting an expected position value for the radiation source-associated-peak in the subsequent video frame, and searching for the radiation source-associated-peak in the subsequent video frame responsive to the gate width and the expected position; and

(f) determine positions of radiation sources;

a mass storage device coupled to the computational device to store data; and

a display device coupled to the computational device to display results.

2. The sensor according to claim 1, wherein each said light sensitive area comprises one array of photosensitive elements.

3. The sensor according to claim 1, wherein each said light sensitive area comprises:

a first array overlayed with a first optical filter for transmitting light in a first spectral band;

a second array overlayed with a second optical filter for transmitting light in a second spectral band; and

a third array overlayed with a third optical filter for transmitting light in a third spectral band such that the first, second and third arrays develop signals responsive to radiation emitted by sources radiating light in the first, second and third spectral bands, respectively.

4. A position sensor for locating multiple radiating sources, comprising:

first, second and third linear sensors, each linear sensor comprising:

an optical device that focuses a source of radiation to form a line image parallel to a longitudinal optical axis of said optical device, and

an elongated light sensitive area positioned in a focal plane of said optical device for developing signals responsive to said radiation, said area comprising at least one linear array of photosensitive elements parallel to an axis that is aligned substantially orthogonal to said longitudinal optical axis of said optical device;

a mounting structure comprising three adjoining non-coplanar vertical surfaces, a first surface disposed at a first angle and a second surface disposed at a second angle to a third surface between the first and second surfaces, the first surface carrying the first linear sensor, the second surface carrying the second linear sensor each with its longitudinal optical axis in a vertical plane, and third surface carrying the third linear sensor with its longitudinal optical axis in a horizontal plane, each linear sensor having its light sensitive area parallel to its associated mounting surface;

a computational device coupled to the linear sensors;

a mass storage device coupled to the computational device; and

a display device coupled to the computational device.

5. The sensor according to claim 4, wherein each said light sensitive area comprises one array of photosensitive elements.

6. The sensor according to claim 4, wherein each said light sensitive area comprises:

a first array overlayed with a first optical filter for transmitting light in a first spectral band;

a second array overlayed with a second optical filter for transmitting light in a second spectral band; and

a third array overlayed with a third optical filter for transmitting light in a third spectral band such that the first, second and third arrays develop signals responsive to radiation emitted by sources radiating light in the first, second and third spectral bands, respectively.

7. The sensor according to claim 4, wherein the first angle is substantially equal to the second angle.

8. The sensor according to claim 4, wherein the computational device is adapted to:

(a) turn radiation sources on and off;

(b) determine an image peak position of a radiation source in a video frame for each of a plurality of radiation sources and linear sensors;

(c) store image peak positions in said storage device;

(d) generate an association table for relating each of the plurality of radiation sources with their respective image peak positions;

(e) set a gate width for searching for a radiation source-associated-peak in a subsequent video frame, predicting an expected position value for the radiation source-associated-peak in the subsequent video frame, and searching for the radiation source-associated-peak in the subsequent video frame responsive to the gate width and the expected position; and

(f) determine positions of radiation sources.

9. The sensor according to claim 8, wherein the computational device is adapted to set the gate width equal to a distance of a nearest neighbor peak of the image peak position in the video frame.

10. A method of operating a position sensor in a slow mode, comprising:

for each of a plurality of radiation sources, in sequence

(a) turning on a radiation source;

(b) determining an image peak position of the radiation source in a video frame for each of a plurality of linear sensors;

(c) storing the image peak positions in a storage device;

(d) turning the radiation source off;

(e) generating an association table for relating each of the plurality of radiation sources with associated image peak positions;

(f) determining the radiation source positions based on the association table; and

(g) repeating steps (a) through (f) for a predetermined time duration.

11. A method of operating a position sensor in a fast mode, comprising:

for each of a plurality of radiation sources, in sequence

(a) turning on a radiation source;

(b) determining an image peak position of the radiation source in a video frame for each of a plurality of linear sensors;

(c) storing the image peak positions in a storage device; and

(d) turning the radiation source off;

generating an association table for relating each of the plurality of radiation sources with an associated image peak position; and

turning on all of the plurality of radiation sources.

12. The method according to claim 11, further comprising:

for each frame in sequence, and for each radiation source in sequence:

setting a gate width for searching for a radiation source-associated-peak in a subsequent video frame;

predicting an expected position value for the radiation source-associated-peak in the subsequent video frame;

searching for the radiation source-associated-peak in the subsequent video frame responsive to the gate width and the expected position;

storing the image peak positions in a storage device;

updating the association table;

repeating the radiation source sequence;

repeating the frame sequence; and

determining the positions.

13. The method according to claim 12, wherein setting the gate width comprises setting the gate width equal to a distance of a nearest neighbor peak of the image peak position in the video frame.

14. A crash test dummy comprising:

a wide-field position sensor attached to the crash test dummy; and

a plurality of optical targets disposed on the crash test dummy at respective locations for measurement by the wide-field position sensor.

15. The crash test dummy according to claim 14, wherein the position sensor comprises:

first, second and third linear sensors, each linear sensor comprising:

an optical device that focuses a source of radiation to form a line image parallel to a longitudinal optical axis of said optical device; and

an elongated light sensitive area positioned in a focal plane of said optical device for developing signals responsive to said radiation, said area comprising at least one linear array of photosensitive elements parallel to an axis that is aligned substantially orthogonal to said longitudinal optical axis of said optical device,

said first, second and third linear sensors each having said light sensitive area arranged in a plane, the axes of the light sensitive areas of said first and second sensors being aligned in a first direction and the axis of the light sensitive area of said third sensor being oriented in a second direction orthogonal to the first direction and disposed between said first and second linear sensors;

a computational device coupled to the linear sensors and adapted to

(a) turn radiation sources on and off;

(b) determine an image peak position of a radiation source in a video frame for each of a plurality of radiation sources and linear sensors;

(c) store image peak positions in a storage device;

(d) generate an association table for relating each of the plurality of radiation sources with their respective image peak positions;

(e) set a gate width for searching for a radiation source-associated-peak in a subsequent video frame, predicting an expected position value for the radiation source-associated-peak in the subsequent video frame, and searching for the radiation source-associated-peak in the subsequent video frame responsive to the gate width and the expected position; and

(f) determine positions of radiation sources;

a mass storage device coupled to the computational device to store data; and

a display device coupled to the computational device to display results.

16. The crash test dummy according to claim 15, wherein each said light sensitive area comprises one array of photosensitive elements.

17. The crash test dummy according to claim 15, wherein each said light sensitive area comprises:

a first array overlayed with a first optical filter for transmitting light in a first spectral band;

a second array overlayed with a second optical filter for transmitting light in a second spectral band; and

a third array overlayed with a third optical filter for transmitting light in a third spectral band such that the first, second and third arrays develop signals responsive to radiation emitted by sources radiating light in the first, second and third spectral bands, respectively.

18. The crash test dummy according to claim 14, wherein the position sensor comprises:

first, second and third linear sensors, each linear sensor comprising:

an optical device that focuses a source of radiation to form a line image parallel to a longitudinal optical axis of said optical device, and

an elongated light sensitive area positioned in a focal plane of said optical device for developing signals responsive to said radiation, said area comprising at least one linear array of photosensitive elements parallel to an axis that is aligned substantially orthogonal to said longitudinal optical axis of said optical device;

a mounting structure comprising three adjoining non-coplanar vertical surfaces, a first surface disposed at a first angle and a second surface disposed at a second angle to a third surface between the first and second surfaces, the first surface carrying the first linear sensor, the second surface carrying the second linear sensor each with its longitudinal optical axis in a vertical plane, and third surface carrying the third linear sensor with its longitudinal optical axis in a horizontal plane, each linear sensor having its light sensitive area parallel to its associated mounting surface;

a computational device coupled to the linear sensors;

a mass storage device coupled to the computational device; and

a display device coupled to the computational device.

19. A direction sensor for locating multiple radiating sources, comprising:

first and second linear sensors, each linear sensor comprising:

an optical device that focuses a source of radiation to form a line image parallel to a longitudinal optical axis of said optical device; and

an elongated light sensitive area positioned in a focal plane of said optical device for developing signals responsive to said radiation, said area

comprising at least one linear array of photosensitive elements parallel to an axis that is aligned substantially orthogonal to said longitudinal optical axis of said optical device,

said first and second linear sensors each having said light sensitive area arranged in a plane, the axes of the light sensitive areas of said first sensor being aligned in a first direction and the axis of the light sensitive area of said second sensor being oriented in a second direction orthogonal to the first direction;

a computational device coupled to the linear sensors and adapted to

(a) turn radiation sources on and off;

(b) determine an image peak position of a radiation source in a video frame for each of a plurality of radiation sources and linear sensors;

(c) store image peak positions in a storage device;

(d) generate an association table for relating each of the plurality of radiation sources with their respective image peak positions;

(e) set a gate width for searching for a radiation source-associated-peak in a subsequent video frame, predicting an expected position value for the radiation source-associated-peak in the subsequent video frame, and searching for the radiation source-associated-peak in the subsequent video frame responsive to the gate width and the expected position; and

(f) determine directions of radiation sources;

a mass storage device coupled to the computational device to store data; and

a display device coupled to the computational device to display results.

20. The sensor according to claim 19, wherein each said light sensitive area comprises one array of photosensitive elements.

21. The sensor according to claim 19, wherein each said light sensitive area comprises:

a first array overlayed with a first optical filter for transmitting light in a first spectral band;

a second array overlayed with a second optical filter for transmitting light in a

second spectral band; and

a third array overlayed with a third optical filter for transmitting light in a third spectral band such that the first, second and third arrays develop signals responsive to radiation emitted by sources radiating light in the first, second and third spectral bands, respectively.

22. The sensor according to claim 21, wherein the first spectral band is red, the second spectral band is green and the third spectral band is blue.